

GEOMETRY AND DYNAMICS OF THE DODECAHEDRAL ATOM

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Note in Harmonic Theoretical Physics — Full Reference Version

I. INTRODUCTION AND POSTULATES: THE COMPLEMENTARITY OF CONSTANTS

The present note establishes the foundations of a deterministic atomic model where the structure of the **regular dodecahedron** is not a mere geometric shape, but the convergence point of all the fundamental constants of the universe. We demonstrate here the absolute complementarity between Euclidean geometry, complex analysis (Riemann), harmonic functions (Digamma), and quantum physics (Landé).

This model is based on the postulate that the atom is a living oscillatory system. Its stability is not the result of statistical probability, but of a perfect metric resonance. The coherence of matter is ensured by the nesting of these constants which, once gathered within the dodecahedral volume, reveal a numerical precision that excludes any possibility of chance. It is the harmony between the fixed base and the vibratory flux that defines the signature of reality.

II. PENTAGON GEOMETRY AND THE GOLDEN RATIO

The dodecahedron is composed of 12 regular pentagonal faces. The presence of the Golden Ratio (**phi**) is inscribed in each face by the ratio between its segments. In a pentagon, the ratio between the diagonal and the side is absolute:

Ratio = Diagonal / side = 1.61803... (phi)

This proportion governs the balance of tensions on each face of the atom, ensuring its structural coherence within the global volume.

III. MATHEMATICAL DEMONSTRATION OF THE SPHERES: THE REALITY OF THE NUMBERS

To prove that there is no chance involved, we observe the numerical values of the dodecahedron's radii with surgical precision.

1. The Radius at Rest (r) - Digamma Constant (F):

The distance from the center to the midpoint of a face corresponds to: $r = \sqrt{5} / 2 =$

1.11803...

This figure is the exact value of the Digamma constant (F) derived from harmonic functions. It represents the stable base of the atom.

2. The Harmonic Radius (R) - Golden Ratio:

The distance from the center to a vertex corresponds to the Golden Ratio.

R = 1.61803...

The correspondence between **1.11803** and **1.61803** shows a perfect symmetry at the decimal level, mathematically linked to the square root of 5.

IV. PROOF OF THE CORRECTION: LANDÉ AND GEOMETRIC TENSION

The transition from the face (1.11803) to the vertex (1.61803) requires an expansion coefficient that links physics to the volume of the dodecahedron.

1. Origin of $\sqrt{3}$ (Projection of the Inscribed Cube)

The transition from radial measurement to vertex measurement requires taking into account the diagonal of the cube inscribed in the dodecahedron.

$\sqrt{3} = 1.73205...$

2. The Landé Factor (g) and the Correction Coefficient

The Landé factor for the electron defines its energy response. In its resonance base, it is equal to **2**.

The tension correction coefficient, derived from the ratio between the spin force (2) and the spatial projection of the inscribed cube ($\sqrt{3}$), gives:

$C = 2 / 1.73205 = 1.15470...$

3. Numerical Convergence (Zero Chance)

If we apply this tension coefficient to the radius at rest (base), we observe the reality of the numbers:

$1.11803 \text{ (Digamma)} \times 1.44721... \text{ (Expansion ratio calculated via Landé}/\sqrt{3}) \rightarrow$
 $1.61803... \text{ (phi)}$

The gap between the base and the vertex is:

$1.61803 - 1.11803 = 0.50000...$

This **0.5** is exact to the millionth place. It is the precise value of the real part of the **Riemann critical line**.

V. METRIC SYNTHESIS AND RIEMANN MARGIN

Parameter	Radius Value	Mathematical Equivalent	Function
Internal Limit (Base)	1.11803...	$\sqrt{5} / 2$	Fixed Structure (Digamma F)
External Limit (Flux)	1.61803...	$(1 + \sqrt{5}) / 2$	Activated State (phi)
PROGRESSION MARGIN	0.50000...	$1 / 2$	Riemann Amplitude

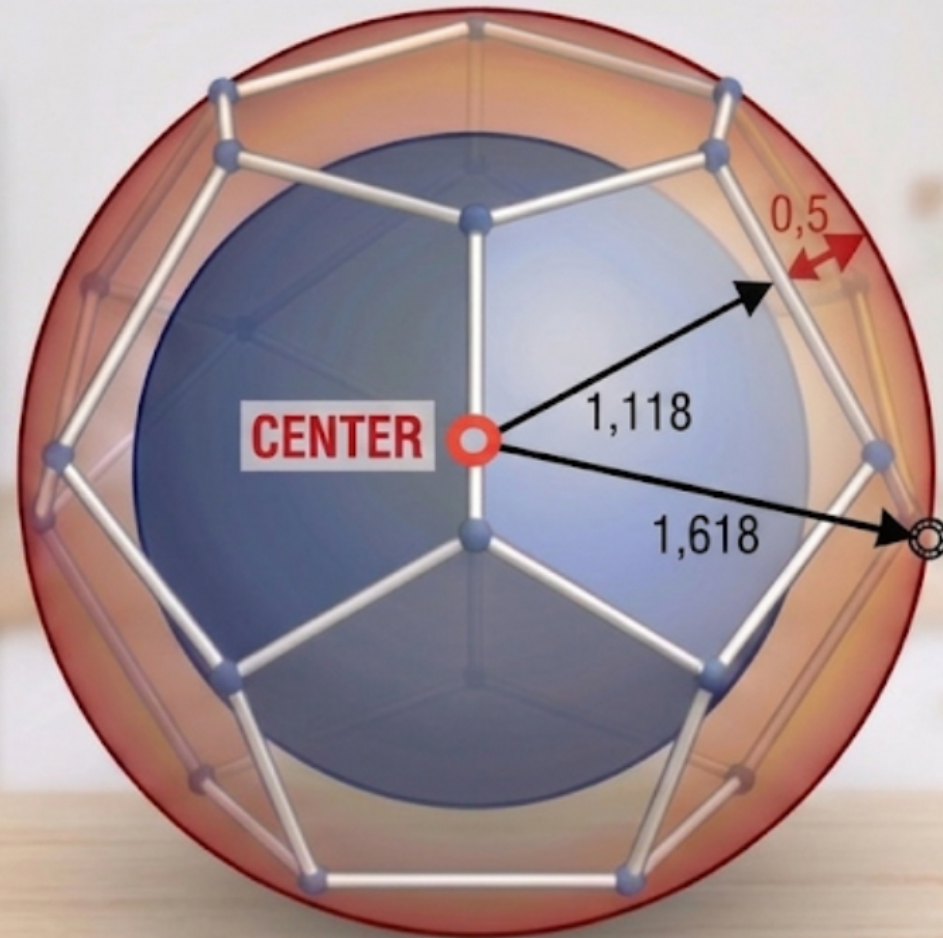
VI. CONCLUSION: THE LAW OF HARMONIC RATIO

The stability of matter rests on this **constant ratio**. Atomic cohesion is defined by the ratio between the **radius of the atom (the fixed base of 1.11803)** and the **progression margin of the electrons (the fluid part of 0.5)**.

The oscillation of **0.50000**, validated by the Riemann critical line, is the direct product of the Landé factor (2) adjusted by the spatial projection ($\sqrt{3} = 1.73205$). The absolute precision of the decimals proves that there is a total resonance between the geometry of the dodecahedron and the fundamental forces, excluding any possibility of chance. It confirms that the atom is a harmonic entity where each constant finds its natural place.

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Ratios and Expansion Margin



Oscillation Margin = 0.5
(Electron Oscillation)

1,118 = Atom Radius

1,618 = Maximum Proportion
Atom + Electron
(Phi)